

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the foregoing amendments and the following remarks.

Claim Status

Claims 2 and 9 have been canceled. Claims 1, 7, 8, 14, and 19-22 are currently amended. Accordingly, claims 1, 3-8, 10-22 are pending in this application.

Claims 1, 7, 8, 14 and 19-22 have been similarly amended. The majority of the amendments have been to rearrange the sequence of the claims to make the claims more understandable. For convenience, a copy of a listing of the clean claims is attached hereto.

The other amendments include: with regard to the end caps, the term "exclusively attached" has been amended to "adjoined" (support shown in paragraph 34 and Figure 1); with regard to the tube sheets, the element has been added that "said tube sheets being sealed to said shell" (support shown in paragraphs 25, and 29-33 and Figure 1); and with regard to the second end cap, the element has been added that "said second end cap being adjoined to said second end of said shell where said second end cap and said second tube sheet defining a second head space therebetween; said second

end cap opening being in communication with said center tube via said second head space" (support shown in paragraphs 15, 16 and Figure 1).

Interview Summary

Applicant would like to thank the Examiner for the courtesies extended by the Examiner in the telephone interview on May 22, 2007. In the interview, the Applicant explained that by having the end caps attached "exclusively" to the ends meant that the end caps were attached to the ends and the ends only, i.e., not to the center tube or any other part of the apparatus. The Examiner acknowledged this difference but explained that the language "exclusively" still presented a 35 USC § 112 problem. Although Applicant disagrees, Applicant has amended the claims to take out this element. However, Applicant' new amendment of "said second end cap being adjoined to said second end of said shell where said second end cap and said second tube sheet defining a second head space therebetween; said second end cap opening being in communication with said center tube via said second head space" provides the unique configuration of the membrane contactor (as explained below) that allows the end caps to be attached exclusively to the ends of the shell.

§112 Rejection

Claims 1, 3-8 and 10-22 are rejected under 35 U.S.C. § 112, first and second paragraph because the originally filed application did not support the previously submitted amendment that added the elements: "first end cap being attached exclusively to the first end of said shell" and "second end cap being attached exclusively to said second end of the shell." Independent claims 1, 7, 8, 14 and 19-22 have been amended to remove these elements. Therefore, the § 112 Rejection is moot and should be removed.

§103 Rejection

Claims 1, 3-8 and 10-22 are rejected as being obvious under 35 U.S.C. 103(a) over Cho (USPN 6616841) in view of Kuzumoto (4,623,460) or alternatively, over Kuzumoto in view of Cho. Applicant respectfully disagrees. Applicant contends that the combination of Cho and Kuzumoto does not teach or suggest all the claim elements of the instant application.

MPEP § 2143 "Basic Requirements of a *Prima Facie* Case of Obviousness" states:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine references teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all claim limitations.

Regarding the third criterion, the court has stated that "to establish *prima facie* obviousness of a claimed invention, **all** the claim limitations must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Applicant contends that the combination of Cho with Kuzumoto does not teach or suggest **all** the claim elements as presently presented. More specifically, applicant contends that the combination does not teach or suggest a membrane contactor comprising, among other things, where "said second end cap being adjoined to said second end of said shell where said second end cap and said second tube sheet defining a second head space therebetween; said second end cap opening being in communication with said center tube **via said second head space.**" In other words, the combination of Cho and Kuzumoto does not teach or suggest providing a membrane contactor that has a head space defined by an end cap and a tube sheet that allows the opening in the end cap to communicate with the center tube **via the headspace.**

Cho, as shown in Figure 4, teaches a membrane contactor with only one end cap (15). End cap (15) has two openings, opening (20) and opening (34). End cap (15) is attached to shell (13) and center tube (12) so that liquid can enter center tube (12) directly through opening (20). As a result, Cho does not teach or suggest a headspace defined by the end cap and the tube sheet that allows the

opening of the end cap to communicate with the center tube **via the headspace**. Thus, Cho does not teach or suggest a membrane contactor comprising, among other things, where "said second end cap being adjoined to said second end of said shell where said second end cap and said second tube sheet defining a second head space therebetween; said second end cap opening being in communication with said center tube via said second head space."

Kuzumoto, as shown in Figure 1, teaches a device with an end cap at each end of the device. At the end of the apparatus that communicates with the center pipe (8), an end cap is provided that has an inlet pipe (7). The end cap is attached to the apparatus at the end of casing (1) and the center pipe (8). As a result, the opening through the end cap, or inlet pipe (7), communicates directly with the center pipe (8). Thus, the apparatus does not provide a headspace defined by the end cap and the tube sheet that allows the opening through the end cap to communicate with the center tube **via the headspace**. Furthermore, the resin layer (3) is not sealed to the casing (1) as in the instant application. This fact makes it impossible for Kuzumoto to provide a headspace defined by the end cap and the resin layer (3). Thus, Kuzumoto does not teach or suggest a membrane contactor comprising, among other things, where "said second end cap being adjoined to said

second end of said shell where said second end cap and said second tube sheet defining a second head space therebetween; said second end cap opening being in communication with said center tube **via said second head space.**"

Accordingly, the combination of Cho with Kuzumoto does not teach or suggest **all** the claim limitations, i.e., a second headspace that allows the opening of the second end cap to communicate with the center tube **via the second headspace.**

In addition, this configuration of a membrane contactor with a second headspace defined by the end cap and the tube sheet that allows the opening of the second end cap to communicate with the center tube **via the headspace**, is not obvious because it unexpectedly resulted in allowing the membrane contactor to be made more easily. See the previously submitted 132 Declaration by one of the named inventors, Amitava Sengupta. The Sengupta Declaration shows that this configuration eliminates the need to dual weld the end cap to the shell and the center tube. This means that by providing the second headspace, the end caps only have to be attached and sealed to the ends of the shell. Thus, the Sengupta Declaration shows that the instant configuration provided an unexpected result by allowing the membrane contactor to be made without the need to simultaneously dual weld (as required by the

prior art) the end caps to the shell and center tube, meaning, the membrane contactor can be made more easily.

Objective evidence, or secondary considerations of obviousness, like an unexpected result or a long felt need, must be weighed in determining obviousness. MPEP § 2141. In addition, the ultimate determination on patentability is made on the entire record, meaning, the secondary considerations of obviousness should be considered in view of any amendments. MPEP § 2141. Thus, in the instant invention, the Sengupta Declaration must be weighed against the current amendments in making a final determination of obviousness.

Therefore, in view of the current amendments and the evidence of record, the 35 USC § 103(a) rejection must be removed and claims 1, 3-8 and 10-22 should be allowed.

Conclusion

In view of the foregoing, Applicant respectfully requests an early Notice of Allowance in this application.

Respectfully submitted,



Jeffrey C. Watson
Attorney for Applicant
Reg. No. 58,612

Customer No. 29494
Hammer & Hanf, P.C.
3125 Springbank Lane
Suite G
Charlotte, NC 28226
Telephone: 704-927-0400
Facsimile: 704-927-0485

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